FIG.1

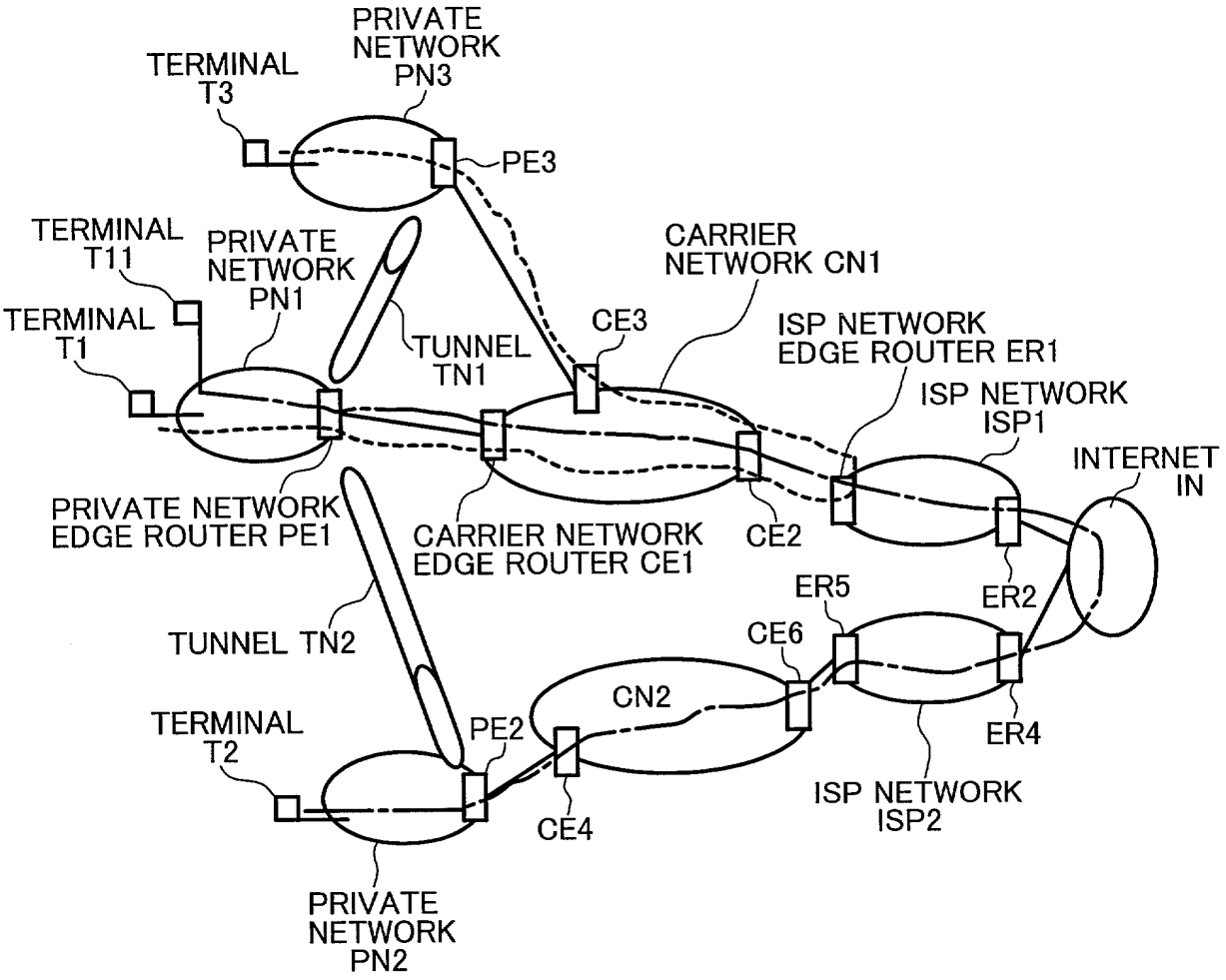

PRIVATE NETWORK PN3
TERMINAL T3
PE3
TERMINAL T11
PRIVATE NETWORK PN1
CARRIER NETWORK CN1
TERMINAL T1
TUNNEL TN1
CE3
ISP NETWORK EDGE ROUTER ER1
ISP NETWORK ISP1
INTERNET IN
PRIVATE NETWORK EDGE ROUTER PE1
CARRIER NETWORK EDGE ROUTER CE1
CE2
ER5
ER2
CE6
TUNNEL TN2
CN2
TERMINAL T2
PE2
ER4
ISP NETWORK ISP2
CE4
PRIVATE NETWORK PN2

FIG.2

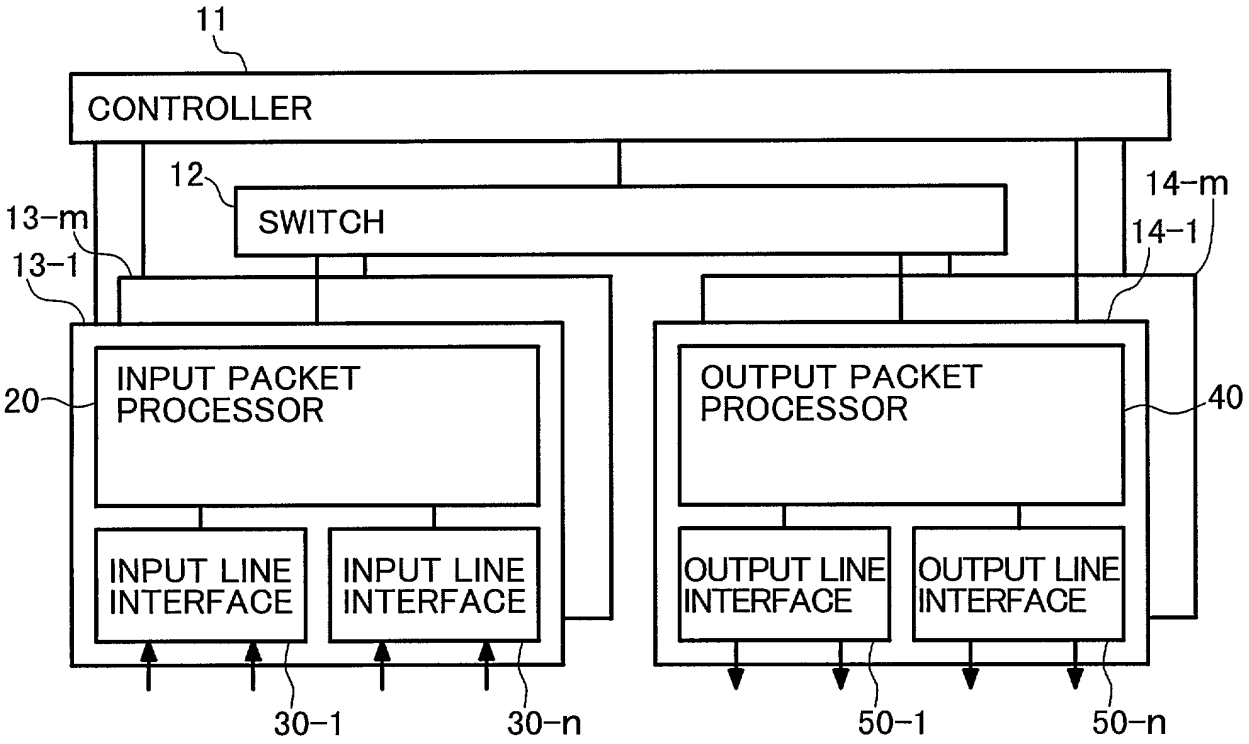

11
CONTROLLER
12
SWITCH
13-m
13-1
14-m
14-1
20
INPUT PACKET PROCESSOR
40
OUTPUT PACKET PROCESSOR
INPUT LINE INTERFACE
INPUT LINE INTERFACE
OUTPUT LINE INTERFACE
OUTPUT LINE INTERFACE
30-1
30-n
50-1
50-n

FIG.3

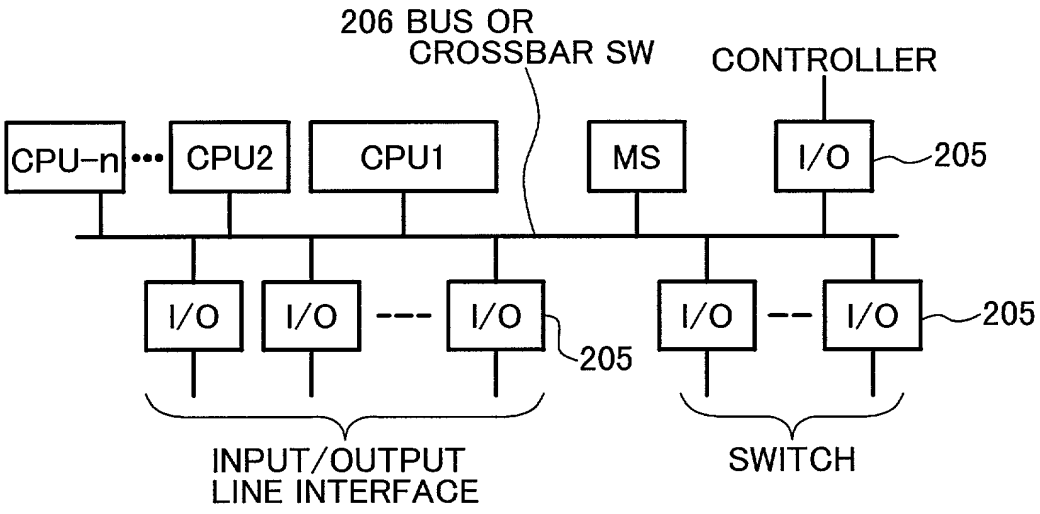

206 BUS OR CROSSBAR SW
CONTROLLER
CPU-n
CPU2
CPU1
MS
I/O
205
I/O
I/O
I/O
205
I/O
I/O
205
INPUT/OUTPUT LINE INTERFACE
SWITCH

FIG.4

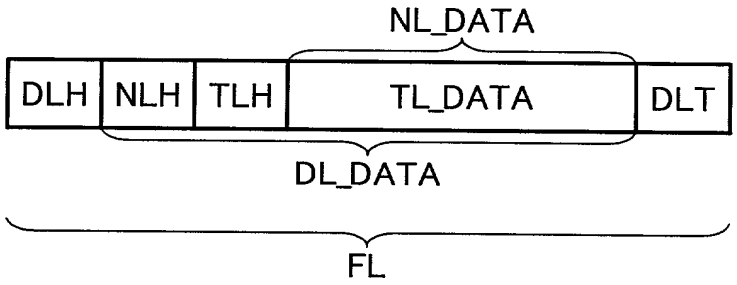


FIG.5

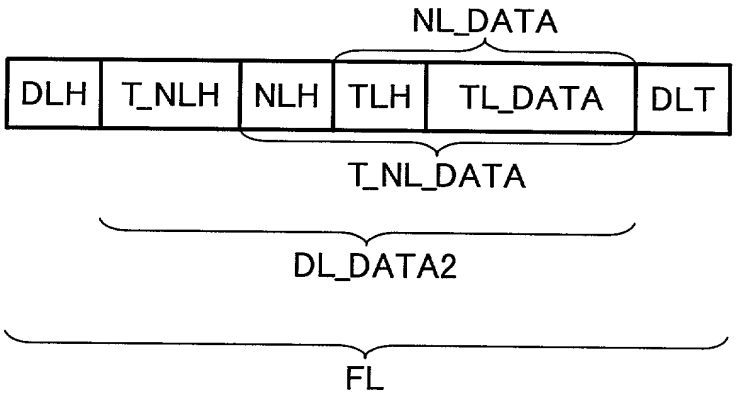


FIG.6

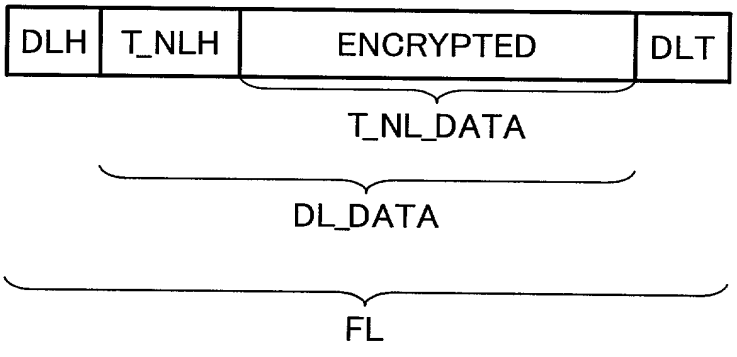


FIG.7

IN1

OUT1

INPUT INFORMATION		OUTPUT INFORMATION				
INPUT LINE NUMBER	INPUT DATA LINK LAYER IDENTIFIER	OUTPUT LINE NUMBER	OUTPUT DATA LINK LAYER IDENTIFIER	DATA LINK LAYER STATE	PACKET FILTERING CONDITION	PROCESSING IDENTIFIER
1	0002	2	0004	DATA COMMUNICATION	0021	1001
1	0011	–	–	LINK ESTABLISHED	8021,C021,C023	0002
1	0010	2	0004	DATA COMMUNICATION	0021	1002
2	0005	–	–	LINK ESTABLISHED	8021,C021,C023	0003
2	0004	1	0002	DATA COMMUNICATION	0021	1003

IN11 IN12 OUT11 OUT12 OUT13 OUT14 OUT15

FIG.8

IN2

OUT2

INPUT INFORMATION		OUTPUT INFORMATION				
INPUT NETWORK LAYER IDENTIFIER	INPUT TRANSPORT LAYER IDENTIFIER	OUTPUT NETWORK LAYER IDENTIFIER	TRANSPORT LAYER STATE	PACKET FILTERING CONDITION	PROCESSING IDENTIFIER	OUTPUT DATA LINK LAYER IDENTIFIER
0001	–	0002	–	–	–	0004
0001	–	0003	–	–	0003	0004
0002	–	0001	–	–	–	0002
0003	–	0001	–	–	0004	0002
0011	0004	0002	TCP SYN WAITING	TCP DP 1020	–	0004
0011	0004	0002	TCP ACK WAITING	TCP DP 1020	0005	0004
0005	0004	0004	TCP SYN WAITING	TCP SP 1020	–	0004
0005	0004	0004	TCP ACK WAITING	TCP SP 1020	0005	0004

IN21 IN22 OUT21 OUT22 OUT23 OUT24 OUT25

FIG.9

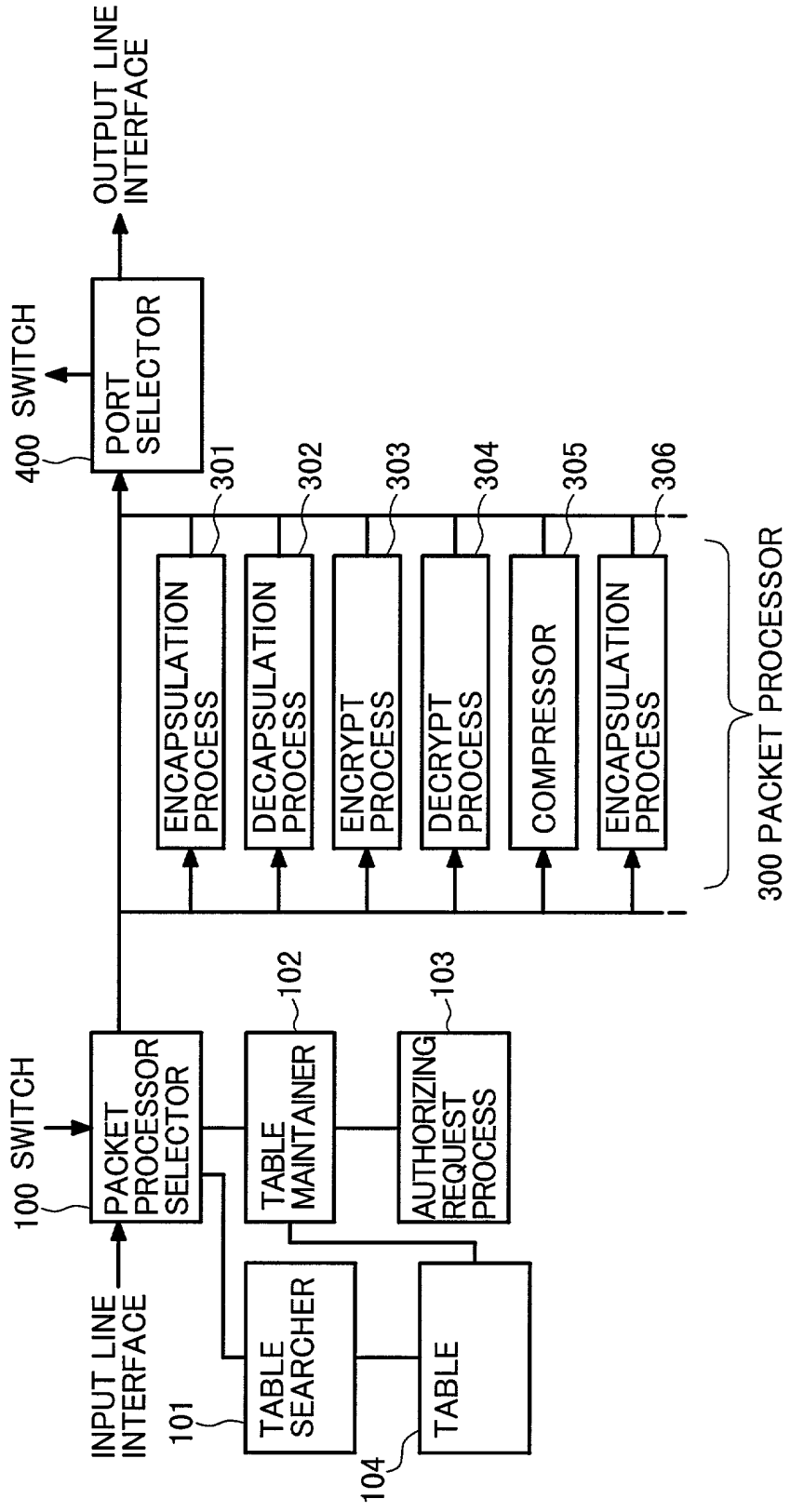

INPUT LINE INTERFACE
100 SWITCH
PACKET PROCESSOR SELECTOR
TABLE SEARCHER
101
TABLE MAINTAINER
102
AUTHORIZING REQUEST PROCESS
103
TABLE
104
ENCAPSULATION PROCESS
DECAPSULATION PROCESS
ENCRYPT PROCESS
DECRYPT PROCESS
COMPRESSOR
ENCAPSULATION PROCESS
301
302
303
304
305
306
300 PACKET PROCESSOR
400 SWITCH
PORT SELECTOR
OUTPUT LINE INTERFACE

FIG.10

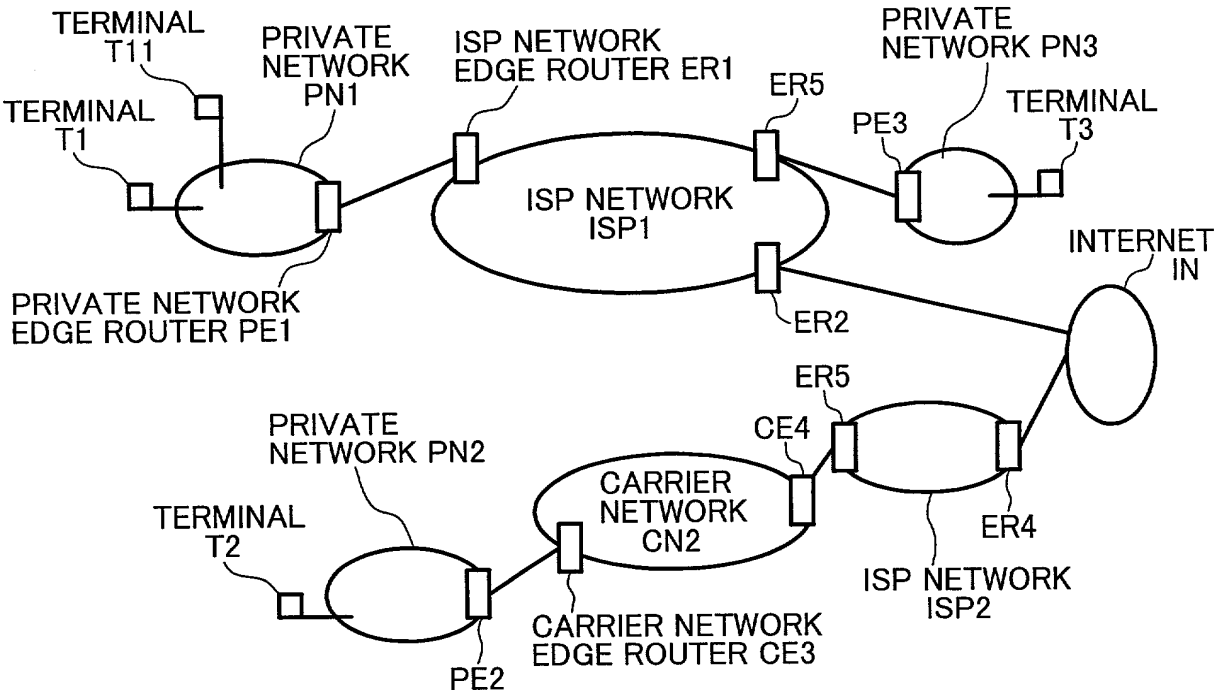
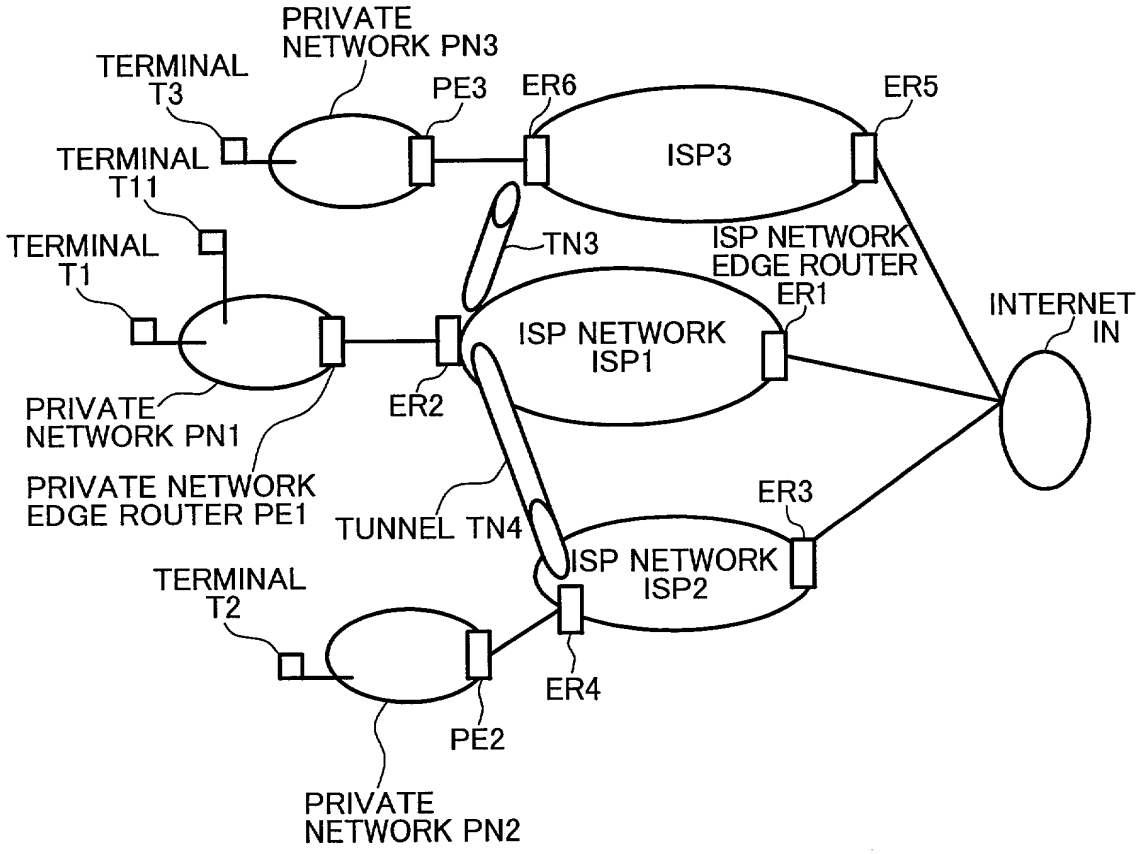

TERMINAL T11
TERMINAL T1
PRIVATE NETWORK PN1
ISP NETWORK EDGE ROUTER ER1
ER5
PRIVATE NETWORK PN3
PE3
TERMINAL T3
ISP NETWORK ISP1
INTERNET IN
PRIVATE NETWORK EDGE ROUTER PE1
ER2
ER5
CE4
PRIVATE NETWORK PN2
CARRIER NETWORK CN2
ER4
TERMINAL T2
ISP NETWORK ISP2
CARRIER NETWORK EDGE ROUTER CE3
PE2

FIG.11


PRIVATE NETWORK PN3
TERMINAL T3
PE3
ER6
ER5
ISP3
TERMINAL T11
TERMINAL T1
TN3
ISP NETWORK EDGE ROUTER ER1
INTERNET IN
ISP NETWORK ISP1
ER2
PRIVATE NETWORK PN1
PRIVATE NETWORK EDGE ROUTER PE1
TUNNEL TN4
ER3
ISP NETWORK ISP2
TERMINAL T2
ER4
PE2
PRIVATE NETWORK PN2